

CLAIMS

1. An active matrix electroluminescent display device comprising an array of display pixels (10), each pixel comprising:
 - 5 an electroluminescent display element (20);
 - a drive transistor (22) for driving a current through the display element;
 - a storage capacitor (24) for storing a voltage to be used for addressing the drive transistor;
 - gated photosensitive means (36) coupled to the storage capacitor (24)
 - 10 for discharging the storage capacitor in dependence on the light output of the display element;
 - and an inverter (50) whose output (51) is coupled to the gate of the gated photosensitive means (36) and whose input (52) is coupled to one side of the storage capacitor (24), the inverter being operable to turn on the gated
 - 15 photosensitive means rapidly to discharge the storage capacitor upon the voltage at the one side of the storage capacitor reaching a predetermined level.
2. A display device according to Claim 1, wherein the drive transistor (22)
20 is connected between a power supply line (32) and the display element (20).
3. A display device according to Claim 2, wherein the gated photosensitive means (36) is connected in parallel with the storage capacitor between the power supply line (32) and the gate of the drive transistor (22).
25
4. A display device according to Claim 3, wherein the inverter (50) comprises a pair of transistors of opposite conductivity type connected in series between first (32) and second voltage inputs (90).
- 30 5. A display device according to Claim 4, wherein the power supply line (32) provides the first voltage input for the inverter.

6. A display device according to Claim 4 or Claim 5, wherein each pixel includes a further capacitor (72) connected between the input (52) of the inverter and the one side of the storage capacitor and on which an adjustment voltage is stored that is dependent on the switching point voltage of the inverter.
7. A display device according to Claim 6, wherein each pixel includes a switching transistor (70) connected between the input (52) and output (51) of the inverter (50) which is operable during a pixel addressing phase so as to hold the inverter at its switch point voltage.
8. A display device according to any one of the preceding claims, wherein each pixel further includes an address transistor (26) connected between an input signal line (14) and a pixel input coupled to a node (54) between the one side of the storage capacitor (24) and the gate of the drive transistor (22).
9. A display device according to Claim 8, wherein the pixels (10) are arranged in rows and columns with a respective input signal line (14) being shared by a column of pixels, and wherein the address transistors (26) of the pixels in a row are connected to and controlled via a respective address conductor (12).
10. A display device according to Claim 9, wherein a voltage input for the inverters (50) of the pixels in one row is provided by an address conductor (90/12) associated with an adjacent row of pixels.
11. A display device according to any one of the preceding claims, wherein the gated photosensitive means comprises a phototransistor.
12. A display device according to any one of claims 1 to 10, wherein the gated photosensitive means comprises a lateral gated photodiode device.

13. An active matrix circuit for driving an array of electroluminescent display elements (20) and comprising an array of driving circuits (10) for driving the display elements, each driving circuit comprising:

a drive transistor (22) providing a drive current for the display element;

5 a storage capacitor (24) for storing a voltage to be used for addressing the drive transistor (22);

gated photosensitive means (36) coupled to the storage capacitor for discharging the storage capacitor in accordance with light incident on the gated photosensitive means; and

10 an inverter (50) whose output (51) is coupled to the gate of the gated photosensitive means (36) and whose input (52) is coupled to one side of the storage capacitor (24), the inverter being arranged to turn on the gated photosensitive means rapidly to discharge the storage capacitor upon the voltage at the one side of the storage capacitor attaining a certain discharge
15 level in response to light incident on the gated photosensitive means.